

A STUDY OF THE SCHOLASTIC ACHIEVEMENT OF
ATHLETES AND OF NON ATHLETES

A THESIS

SUBMITTED TO THE DEPARTMENT OF
EDUCATION AND THE GRADUATE COUNCIL OF THE KANSAS STATE
TEACHERS COLLEGE OF EMPORIA IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE

BY

WILSON J. HUTCHISON

MAY 1939

Approved for the Major Department

H. E. Ahrens

Approved for the Graduate Council

[Signature]

ACKNOWLEDGMENT

The writer wishes to express his sincere appreciation to Dr. H. E. Schrammel, who suggested the study, for his kind consideration and helpful criticism and direction in the preparation of this thesis.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	1
Purpose of the study	1
Sources of data	2
Procedure	2
II. STATISTICAL STUDY OF ATHLETES AND NON ATHLETES	4
Comparative achievement by measures of central tendency and variability	4
Comparison of achievement on basis of various other statistical measures	8
Decile rank on entrance tests compared with the decile rank of those graduating	8
Athletes and non athletes not graduating	9
Age by decile rank	10
III. CONCLUSION	12
BIBLIOGRAPHY	14

LIST OF TABLES

TABLE	PAGE
I. Comparison of the Achievement of Athletes and Non Athletes for Four Years of College on the Basis of Elementary Measures of Central Tendency and Variability	4a
II. Percentage of Athletes and Non Athletes Who Remained in School During a Stated Number of Semesters	5a
III. Comparison of the Achievement of Athletes and Non Athletes on Basis of Various Statistical Measures	6a
IV. The Number of Athletes and Non Athletes of Each Age in Each Decile	10a

LIST OF FIGURES

FIGURE	PAGE
1. Percentage of Athletes and Non Athletes Remaining in College	7a
2. Comparison of Percentage of Athletes and Non Athletes Eventually Graduating from College	7b
3. Decile Rank of Athletes and Non Athletes Taking Entrance Tests Compared with the Decile Rank of Those Graduating. .	8b
4. The Per Cent of Athletes and Non Athletes from Each Decile Who Did Not Graduate from College	9a

CHAPTER I

INTRODUCTION

What part does athletics play in holding students in school? What incentive for scholarship does the athlete have over the non athlete or vice versa? Is the scholastic achievement of college athletes greater or less than of the non athlete? These are some of the many questions asked today. Many different attempts have been made in study along these lines and many conclusions reached. With the increased demands made today by schools and colleges for extra-curricular activities and the encouragement of outstanding athletes to attend some school, this relationship between "brain and brawn" is quite important and has lead to many interesting discussions.¹ In this study an athlete is interpreted to mean any student who has been on an interscholastic athletic team and has qualified for an award.² Many people consider athletics as an activity in which only physical strength is required while others contend that intelligence is also a necessity.³

Purpose of the study. The purpose of this study is to consider the scholastic achievement of the athletes and the non athletes of the Kansas State Teachers College, Emporia, Kansas. The three types of athletes considered are the football, basketball and track letter men.

¹ Jones, Rowland H., "A Comparison of the Intelligence of High School Athletes with Non Athletes." School and Society, 42:415. September, 1935.

² Ibid., p. 415.

³ Ibid., p. 416.

The years inclusive used in this study are from nineteen hundred and twenty five through the fall enrollment of nineteen hundred and thirty seven. The grades computed are for each semester of work attained through the regular four years of college or as many semesters as the students attended. The data are computed from the semesters average of grades.

Sources of data. The data used in this study were taken from the files of the Bureau of Educational Measurements, Kansas State Teachers College, Emporia, Kansas. This bureau keeps a record of each student who enters college on a card known as the "K. S. T. C. Student's Record Card." Part of the record card is filled out by the student when he takes the entrance tests at the beginning of his freshman year, the rest of the card, by the Bureau of Educational Measurements after the entrance tests have been graded. His semesters grades are taken from the registrar's office and recorded on the back of these cards.

Procedure. The following data were worked out for this study and the information secured from the students record card with reference to those who had taken entrance tests and were given decile ratings. A few letter men were excluded from this study because decile ratings were not available for them. A list of all athletes who had obtained letters in football, basketball and track was obtained from the department of physical education. These men were listed alphabetically on data sheets with their age, decile rank, and year of entrance to college. The individual scholastic record of each student was recorded on a point basis in accordance with the number of letter grades made in each hour of work. No

physical education credit was recorded. The points were figured as follows: for each hour of A one point was given; each hour of B, two points; each hour of C, three points; each hour of D, four points; and each hour of F, five points. From the total number of points for each semester an average grade was computed for each student. Data were available for 106 athletes and this number is used for comparative figures in decile ranking and number of withdrawals.

In order to compare the average grades of athletes with a representative group of non athletes, a control group was selected. This consisted of a random "sampling" of 106 students. These students were selected as near the age, decile rank, and year of college entrance as the athletes. Their grades were figured exactly the same as those of the letter men. The number of students in each semester varies in different comparisons due to the withdrawal of students from school but tables and figures have been constructed for each case to show relationships or differences, and relationship was computed accordingly.

CHAPTER II

STATISTICAL STUDY OF ATHLETES AND NON ATHLETES

In this chapter are presented the data for the statistical study of athletes and non athletes. The following data are considered: comparative achievement by measures of central tendency and variability; comparative achievement by various other statistical measures; comparison of decile rank on entrance tests of those who graduate; decile rank of non graduates; age rank by deciles.

Comparative achievement by measures of central tendency and variability. Table I shows a comparison of the achievement of athletes and non athletes for four years of college on the basis of elementary measures of central tendency and variability. It will be observed that there were 155 athletes and 105 non athletes at the end of the first semester in the freshman year. For the first semester of the freshman year the athletes made an average grade of 3.09 and the non athletes made an average of 3.36. This is a slight advantage for the athletes, but it will be observed that the non athletes surpassed the athletes during the following semesters, the only exception being the first semester of the senior year when the two groups tied for honors. It will be further noticed that the average for both groups increased after the first year indicating higher scholastic achievement as the semesters progressed.

It will be noted that the sigma of the athletes for the first semester of the freshman year was .585 while for the non athletes during the same period it was .800. This would indicate that the athletes,

TABLE I
 COMPARISON OF THE ACHIEVEMENT OF ATHLETES AND NON ATHLETES
 FOR FOUR YEARS OF COLLEGE ON THE BASIS OF ELEMENTARY
 MEASURES OF CENTRAL TENDENCY AND VARIABILITY

	Freshman		Sophomore		Junior		Senior	
	I*	II	I	II	I	II	I	II
1st semester								
Average	3.09	3.36	3.07	3.00	2.90	2.67	2.93	2.93
Sigma	.585	.800	.655	.800	.645	.660	.620	.915
Sigma average	.047	.079	.068	.180	.066	.120	.074	.183
No. of students	155	103	127	54	94	29	70	25
2nd semester								
Average	3.16	3.08	3.00	2.93	3.05	2.64	2.71	2.69
Sigma	.630	.830	.715	.800	.600	.635	.541	.620
Sigma average	.051	.091	.065	.120	.063	.127	.027	.130
No. of students	152	82	122	43	90	25	68	22

* Roman numeral I in each case refers to athletes and the II, to the non athletes.

Read table thus; For the athletes for the first semester of the freshman year the average was 3.09; the sigma was .585; and the sigma average was .047. The number of students was 155.

although their general average was lower for each semester except the first semester of the freshman year, have their grades as a whole less scattered than the non athletes. This condition is noted in each semester of the four years.

The sigma average is a statistical expression of the reliability of the mean. Since all of these measures are comparatively small, the means are fairly reliable. It will be noted, however, that on the basis of these criteria the means of the athletes are slightly more reliable than those of the non athletes. The significance of these measures will be further considered in connection with the sigma difference of the means.

In observing the number of students comprising each group for the various semesters we find that both groups become smaller from semester to semester, but the athletes were more persistent in attendance than the non athletes. With the first semester the non athletes decreased from 103 to 82 while the athletes decreased only from 155 to 152. This would indicate that athletic activity tends to give more incentive for attendance. It will be noted further that attendance was more steady for both groups in the junior and senior years due probably to better adjustment in school activities.

Further observation of attendance is noted in Table II in which is listed the percentage of athletes and non athletes who remained in college during a stated number of semesters.

It is observed that at the end of the first semester of the freshman year 93% of the athletes remained in college and in the first

TABLE II
 PERCENTAGE OF ATHLETES AND NON ATHLETES WHO REMAINED
 IN SCHOOL DURING A STATED NUMBER OF SEMESTERS

	Freshman	Sophomere	Junior	Senior
1st sem.	93	76	57	42
2nd sem.	92	75	54	41
A. Athletes				
1st sem.	98	51	28	24
2nd sem.	78	41	24	21
B. Non athletes				

Read table thus: In the first semester freshman year 93% of the athletes remained in school, 98% of the non athletes. In the second semester freshman year 92% of the athletes remained in school, 78% of the non athletes.

semester of the sophomore year only 76% remained, or an 18% loss. For the athletes in the first semester between the sophomore and junior years the withdrawal was from 76% to 57%, or a 25% loss; and between the first semester of the junior and senior years the withdrawal was from 57% to 42%, or a 27% loss.

For the athletes second semester losses were as follows: between the freshman and sophomore years, from 92% to 75%, or a 28% loss; between the sophomore and junior years, from 75% to 54%, or a 28% loss; between the junior and senior years, from 54% to 41%, or a 24% loss.

It is further observed from Table II that among the non athletes from the first semester of the freshman year to the corresponding semester of the sophomore year the loss was from 98% to 51%, or a 48% loss. For the same group and semesters between the sophomore and junior years the loss was from 51% to 28%, or a 46% loss; and between the junior and senior years the number remaining in school diminished from 28% to 24%, or a 14% loss.

It is further noted from Table II that the non athletes between the second semesters of the freshman and sophomore years decreased from 78% to 41%, or a 48% loss; between the sophomore and junior years, the decrease was from 41% to 24%, or a 42% loss; and between the junior and senior years the number remaining dropped from 24% to 21%, or a 13% loss.

It appears that the athletes were more consistent in attendance than the non athletes except between the junior and senior years when the percentage of withdrawals of the latter was not as high as that of the athletes.

It might be observed that better financial opportunities for athletes makes possible better chances to continue their education.

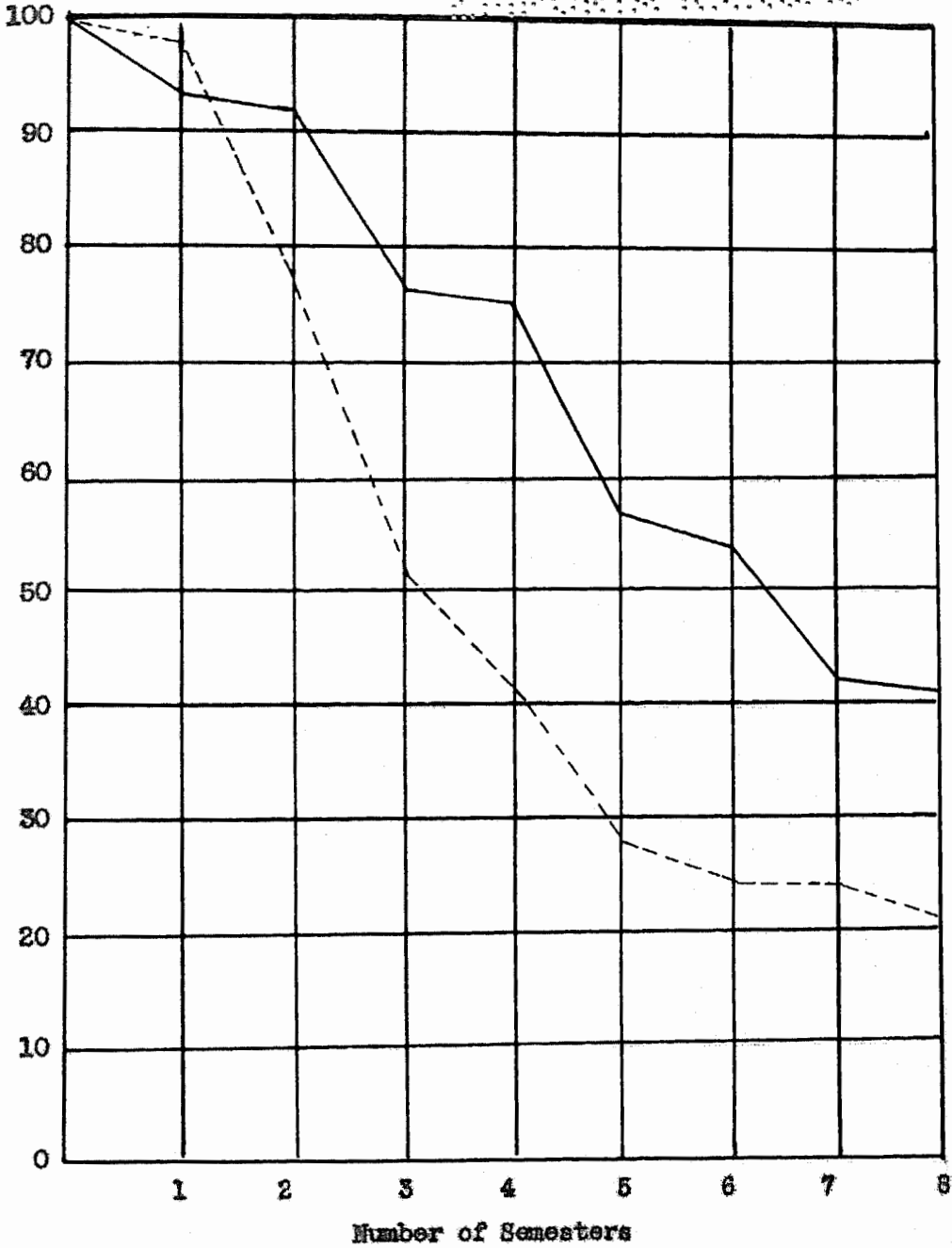
Figure 1 gives a graphical portrayal of the attendance data presented in Table II. It is noted that there was a very marked withdrawal among the non athletes with the greatest withdrawal of 98% to 51% from the first semester to the third semester. From the fourth semester to the eighth semester the withdrawals were more steady among the non athletes with only 21% remaining at the end of eight semesters. It will be further noted that the withdrawals of the athletes was not so marked, with the greatest drops from the second to the third semester and from the fourth to the fifth semester. Of these, 41% remained at the end of eight semesters. It is evident here as in connection with Table II that more athletic interest apparently tends to hold the students in school to a higher degree.

In Figure 2 is presented the percentage of athletes and non athletes graduating from college including the eight stated semesters and extra hours taken in order to eventually reach the objective of graduation. Quite a number from both groups had to go extra semesters or to summer school in order to graduate. The data presented in Figure 2 include all students who finally graduated.

In the athletic group there were 75 students, or 45%, that graduated out of the 166 who enrolled as freshmen. In the non athletic group, however, only 31 students, or 29%, of the original 105 reached the objective of graduation.

These percentages, it will be observed, are slightly higher than

Per cent



LEGEND: Athletes _____ Non Athletes - - - - -

FIGURE 1

PERCENTAGE OF ATHLETES AND NON ATHLETES

REMAINING IN COLLEGE

Per cent

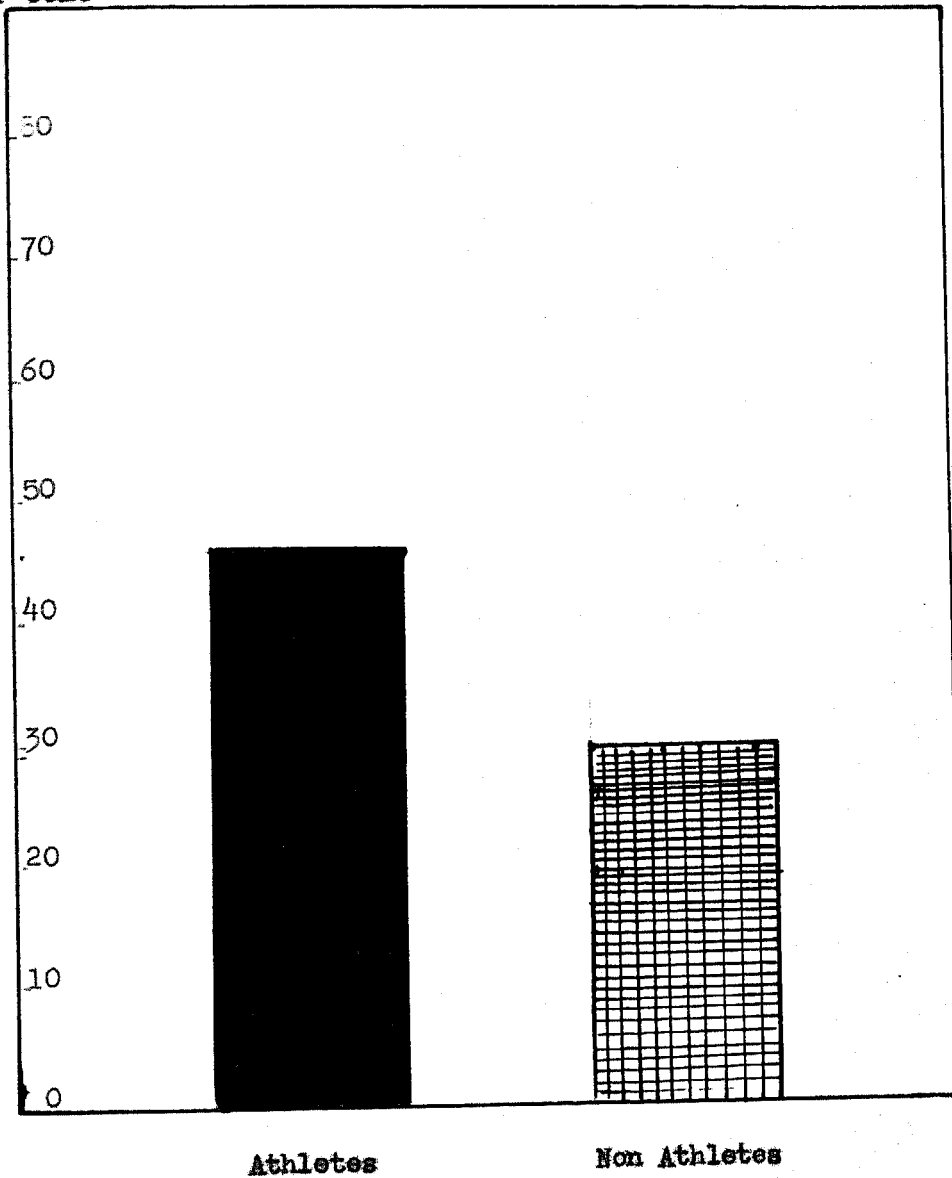


FIGURE 2

COMPARISON OF PERCENTAGE OF ATHLETES AND NON ATHLETES
EVENTUALLY GRADUATING FROM COLLEGE

those presented in Figure 1. The apparent discrepancy is accounted for by the fact that in Figure 2 eventual graduation by attendance in excess of eight semesters is included.

Comparison of achievement on basis of various other statistical measures. Table III gives a comparison of the achievement of athletes and non athletes on the basis of various other statistical measures. It is noted that in the first semester of the freshman year the difference (D) between the general average of the athletes and non athletes is .27. In this study a minus difference means that the average of the non athletes is higher than that of the athletes. It is also noted that for the first semester of the freshman year the sigma difference is .091. In the difference divided by the sigma difference between the two groups a ratio of 3.00 is obtained. This ratio favored the athletes and indicates that there are practically 100 chances in 100 that the difference is statistically significant. Six of the remaining ratios favored the non athletic group and in one of them the two groups were equal. The six which favored the non athletes ranged from 64 to 99 chances in 100 of being statistically significant.

Decile rank on entrance tests compared with the decile rank of those graduating. In Figure 3 is observed the decile rank of athletes and non athletes taking entrance tests compared with the decile rank of those eventually graduating.

Among the athletes taking entrance tests it is noted that the largest number in a single decile was twenty-six in decile II and from this number only fourteen graduated. The smallest number was in the

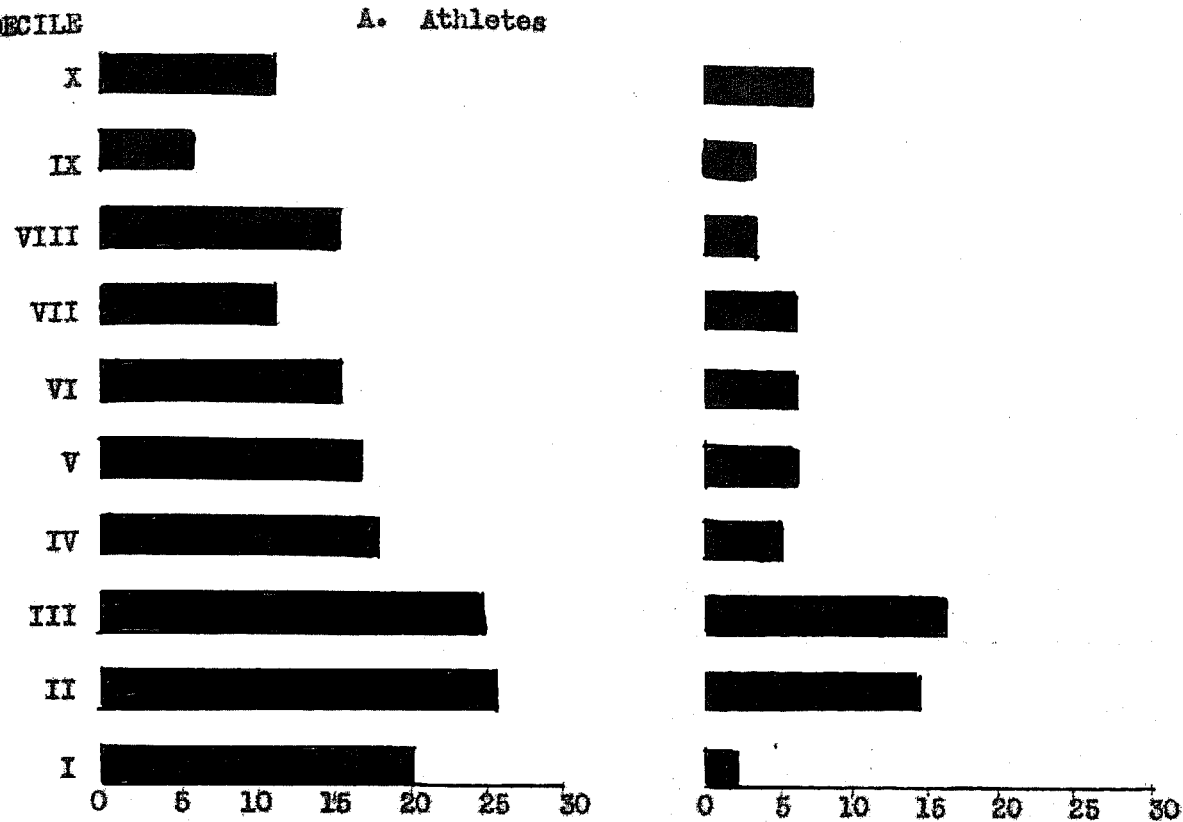
TABLE III
 COMPARISON OF THE ACHIEVEMENT OF ATHLETES AND NON
 ATHLETES ON BASIS OF VARIOUS STATISTICAL MEASURES

		D	Diff.	$\frac{D}{\text{diff.}}$	No. chances
FRESHMEN	1st semester	.27	.091	3.00	100
	2nd semester	-.08	.104	-.80	-79
SOPHOMORES	1st semester	-.07	.189	-.38	-64
	2nd semester	-.07	.136	-.54	-70
JUNIORS	1st semester	-.23	.137	-1.80	-96
	2nd semester	-.41	.141	-2.90	-99
SENIORS	1st semester	.00	.197	.00	50
	2nd semester	-.02	.049	-.41	-65

Read table thus: For first semester freshmen the D (difference in achievement) was .27; the sigma difference was .091; the D over the sigma difference was 3.00; and the number of chances in 100 of a true difference was 100. For second semester freshmen the D was -.08; the sigma difference was .104; the D over the sigma difference was -.80; and the chances in 100 was -79.

The minus sign (-) refers to the non athletes and no sign refers to the athletes.

A. Athletes



B. Non Athletes

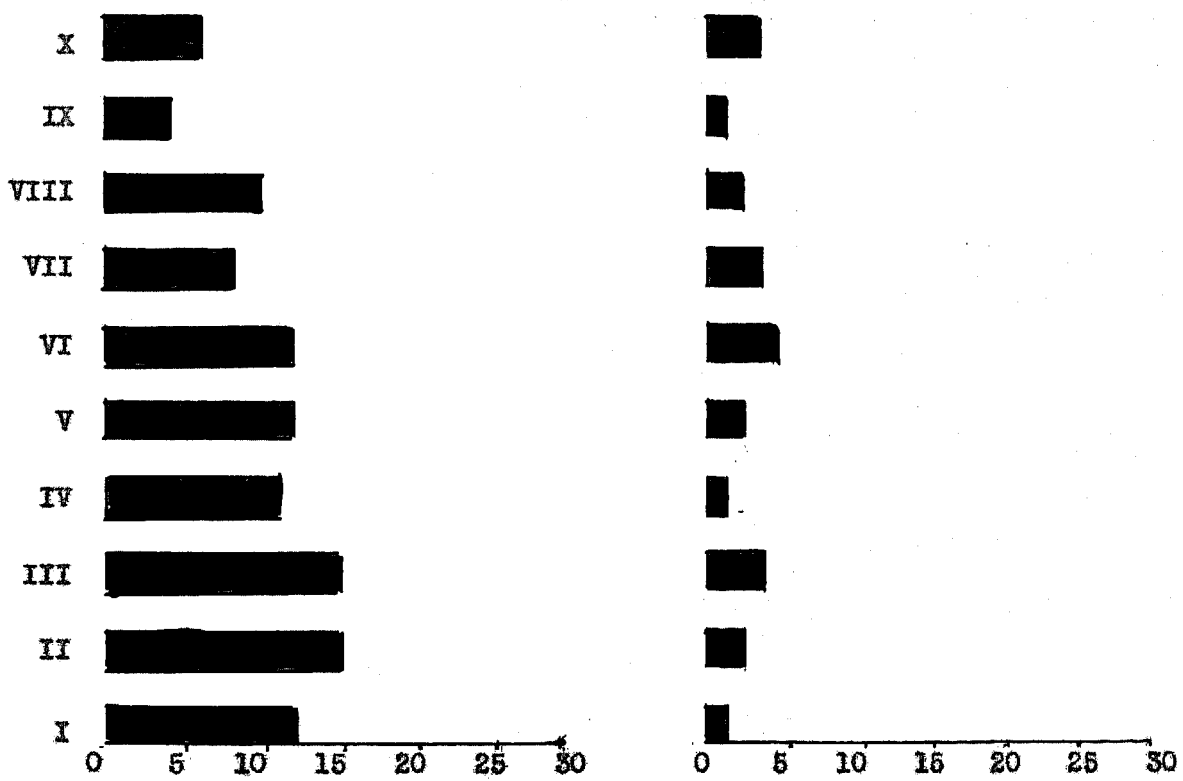


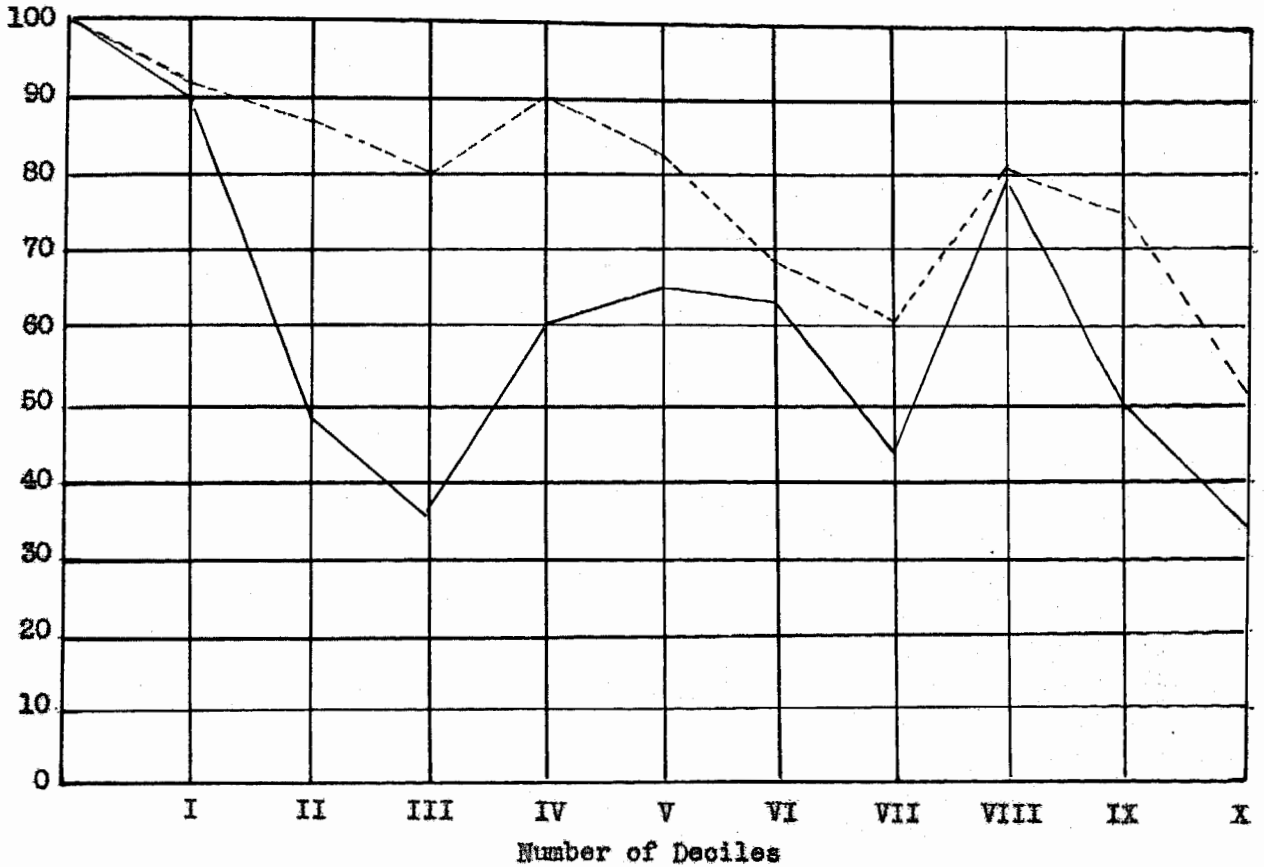
FIGURE 3

DECILE RANK OF ATHLETES AND NON ATHLETES TAKING ENTRANCE TESTS COMPARED WITH THE DECILE RANK OF THOSE GRADUATING

ninth decile with six athletes, and of the six only three graduated. In the fifth decile there were seventeen athletes who took entrance tests and in the sixth decile there were sixteen, and from these two deciles six graduated from each. It is interesting to note that among twenty athletes in the first decile who took entrance tests only two completed college. In the tenth decile out of eleven taking entrance tests only seven graduated. Among the higher deciles it is noted that in the eighth decile with sixteen athletes taking entrance tests only three graduated and in the same decile for the non athletes with ten taking the entrance tests only two graduated.

From the non athletes taking entrance tests there were fifteen in the second decile and from this list only two graduated, and in the third decile only three of the original fifteen graduated. It is interesting to observe that from the twelve decile I students among the non athletes taking entrance tests there was only one graduate. From the tenth decile, on the other hand, three of the original six graduated, making a showing almost as high as the athletes in that decile. This last observation tends to show that students in the first decile have more difficulty in completing their college work and adjusting themselves to college requirements. The higher decile students as a whole did better work and were able to graduate in larger numbers. The students among the athletes from the fifth to the tenth deciles, however, show a much larger proportion of graduates than the non athletes.

Athletes and non athletes not graduating. Figure 4 shows graphically the per cent of athletes and non athletes from each decile



LEGEND: Athletes _____ Non Athletes - - - - -

FIGURE 4

THE PER CENT OF ATHLETES AND NON ATHLETES
FROM EACH DECILE WHO DID NOT GRADUATE
FROM COLLEGE

that did not graduate from college. In the first decile 92% of the non athletes did not graduate as compared with 90% of the athletes. In the second decile 87% of the non athletes did not graduate compared with 48% of the athletes. In the third decile 80% of the non athletes failed to graduate compared with 36% of the athletes. In the eighth decile the two groups had most nearly the same record. Eighty per cent of the non athletes and 79% of the athletes from this decile failed to graduate. In the tenth decile is observed the best degree of persistence for both groups with 50% of the non athletes and 34% of the athletes not graduating. On the whole the non athletes show a steadier trend in the higher per cents failing to graduate, while the athletes show quite a fluctuation but always being well below the non athletes. This tends to show that both the athletes and the non athletes in the five highest deciles have a tendency to remain in school longer than those of the lower groups, but the athletes consistently show better persistence than the non athletes. These findings compare favorably with other studies that students in the higher deciles tend to remain in school longer.

Age by decile rank. Table IV shows the number of athletes and non athletes of each age in each decile. This is the list before any withdrawals were taken into account. It will be noted that the ages of seventeen, eighteen, nineteen, and twenty are the years in which the largest numbers took the entrance tests and that the age of nineteen was the modal age for both groups. The age range for the athletes was from sixteen to twenty-five and for the non athletes from seventeen to twenty-three. It is evident from this table that no age group had a monopoly on the higher

TABLE IV

THE NUMBER OF ATHLETES AND NON ATHLETES OF
EACH AGE IN EACH DECILE

Decile	ATHLETES										Decile	NON ATHLETES									
	Age of students											Age of students									
	16	17	18	19	20	21	22	23	24	25		16	17	18	19	20	21	22	23	24	25
X	0	1	4	3	1	0	0	1	0	1	X	0	1	1	2	1	0	0	1	0	0
IX	0	1	2	1	1	1	0	0	0	0	IX	0	1	1	2	0	0	0	0	0	0
VIII	0	3	6	4	1	2	0	0	1	0	VIII	0	1	4	1	1	1	1	0	0	0
VII	1	4	3	1	0	0	0	0	0	0	VII	0	2	5	1	0	0	0	0	0	0
VI	0	4	3	4	2	2	0	1	0	0	VI	0	4	2	3	3	0	0	0	0	0
V	0	3	5	2	4	1	0	1	0	0	V	0	4	2	1	5	0	0	0	0	0
IV	0	7	3	2	5	0	1	0	0	0	IV	0	4	2	1	5	0	1	0	0	0
III	0	3	8	9	4	0	0	0	0	0	III	0	3	3	7	1	0	0	0	0	0
II	0	0	5	15	3	2	2	0	0	0	II	0	1	4	6	2	1	1	0	0	0
I	0	0	4	5	9	1	1	0	0	0	I	0	0	3	4	5	0	0	0	0	0
Totals	1	26	43	46	30	9	4	3	1	1		0	21	27	28	23	2	3	1	0	0

Read table thus: of the athletes ranking in decile I, one was seventeen years of age; four were eighteen years of age; three were nineteen years of age; and so on.

decile ratings, but on the whole the younger students had, at least, a slight advantage in this respect.

CHAPTER III

CONCLUSIONS

The findings of this study have been as follows:

1. The non athletes had a slightly higher scholastic achievement than the athletes.
2. Athletes remained in school more semesters and more graduated than the non athletes.
3. The non athletes showed a high withdrawal rate in the freshman and sophomore years, particularly the first year.
4. Both the athletes and the non athletes showed a steadier attendance during the junior and senior years than in the freshman and sophomore years.
5. There were better grades made by both groups in the last two years of college.
6. The non athletes showed the most consistency in their scholastic achievement over a four year period.
7. There was not such a large percentage withdrawing from year to year among the athletes.
8. There was a larger number of both athletes and non athletes in the second and third deciles in enrollment but the tenth decile showed a larger number of completions especially in the athlete group.
9. Students in the upper decile are less likely to withdraw from school before completing their work than the ones in the lower deciles.
10. First decile students in particular showed the most withdrawals

among both groups.

11. The age of nineteen seemed to be the most common age for enrollment among both groups.

12. Athletics seemed to be a holding power for many students in the athlete group as evidenced by comparative withdrawals.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Chapin, Stuart F., "Extra-Curricular Activities of College Students." School and Society, 23:212-216 (February 13, 1936)
- Eaton, Dorothy and Shannon, J. R., "College Careers of High School Athletes and Non Athletes." The School Review, 41:356-361 (May, 1934)
- Garrett, Henry E., Statistics in Psychology and Education. New York: Longmans, Green and Company, 1926. 147 pp.
- Jones, Rowland H., "A Comparison of the Intelligence of High School Athletes with Non Athletes." School and Society, 42:415-416 (September, 1935)
- Maney, Charles A., "The Grades of College Football Students," Educational Research, (November, 1915), 762-765.
- Paul, J. B., "Placement Test Scores vs. College Academic Attainment." School and Society, 48:506-508 (October 15, 1938)
- Rowe, Floyd, "College Athletes." School and Society, 46:59-60 (July 10, 1937)
- Swanson, A. M., "The Effect on High School Scholarship of Pupil Participation in Extra-Curricular Activities." The School Review, 32:613-626 (October, 1924)

1964 945
AMERICAN BINDERY
TOPEKA, KANSAS